Space Weather Forecast

Issued on Thursday 19 December 2024 at 13:10 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares (Minor-Moderate Radio Blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate, with an isolated Moderate class flare and frequent Common class flares. There are seven sunspot regions on the Earth-facing disc. A region in the southwest continues to be the most complex sunspot group. A second region slightly further east after showing the most growth in the last 48 hours has begun to slow in any developments and has remained stable. A third region in the southeast is growing in size and becoming more complex. The remaining spots appear magnetically simple. No Earth-directed Coronal Mass Ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Solar winds were at Elevated levels for much of the perod and are now slightly elevated at 430 km/s. The Interplanetary Magnetic Field (IMF), remained weak throughout. The north-south component, fluctuated weakly northwards and southwards. Geomagnetic activity was at Quiet to Unsettled levels.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate Solar activity is forecast with a continuing chance of Moderate class flares, and the probability increases gradually through the forecast period, due to more active regions anticipated to rotate across the southeast limb from the far-side.

Solar Wind / Geomagnetic Activity: Quiet to Unsettled geomagnetic activity is likely to continue in coming days. Solar winds, now at slightly elevated levels, may reach Slow levels by Day 3 (21 Dec). Several CMEs that left the Sun in the past few days are forecast as near misses, but cannot be completely ruled out as flanking arrivals at Earth, so there is some uncertainty in the forecast currently.

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor solar radiation storms, in response to any notable solar flares.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	40	60	60	60
Very Active	R3-R5 (X Class)	No	2	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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